

APPENDIX E – EXTRACTS OF USFWS RAPTOR PROTECTION GUIDELINES

USFWS GUIDELINES FOR AVOIDING AND MINIMIZING IMPACTS

I. AVOIDING AND MINIMIZING IMPACTS TO HABITAT

A. FORAGING HABITAT

1. Avoid disturbance to raptor habitats. Despite limited geographic extent, riparian vegetation provides extraordinary wildlife value, and should be given special attention.
2. Retain or increase snags within and adjacent to project areas as hunting perches for raptors. Prey species also utilize snags as nesting areas, food sources, and overwintering habitat.
3. Minimize impacts over broad areas, to the extent feasible. Place proposed new construction and human activities within already disturbed areas whenever possible.
4. Limit the project footprint to the smallest area necessary to meet project needs.
5. Reclaim disturbed areas and obliterate roads as soon as possible following construction, operation, and completion of project activities.
6. Close or reduce use of roads within known high-use raptor areas, particularly during crucial raptor breeding or winter roosting periods.
7. Increase prey habitat through measures such as vegetation plantings or thinnings, depending on the target species.

B. NESTING AND ROOSTING HABITAT

1. Place proposed project developments to avoid direct or indirect loss or modification of nesting and roosting habitat.
2. Enhance nest and roost site availability to increase attractiveness to raptors. For some species, artificial nest sites can be constructed to enhance use of previously or currently disturbed areas. In some situations, natural substrates can be modified or developed to attract nesting raptors.
 - a. Plant trees to expedite replacement in areas suffering effects of habitat degradation. Trees commonly utilized by nesting raptors include aspen, cottonwoods, willows, junipers, ponderosa pines, and other conifers. Where livestock grazing occurs, plantings may need to be protected from livestock damage until they become established. Livestock grazing

- strategies should be developed to ensure maintenance or improvement of raptor nesting/roosting habitat.
- b. Trees or snags with existing raptor nests can be stabilized if alternative sites are limited.
 - c. Rockpiles can be constructed to provide perches and nest sites for some raptor species. Prey species also benefit from the hiding and denning values provided by rockpiles.
 - d. Ledges and crevices can be widened or deepened on cliffs to encourage nesting by some raptor species.
 - e. Artificial nest platforms and nest boxes can be constructed for some raptor species to increase potential nesting sites.
3. Improve existing nest sites. Quality of existing nests may be more important than the quantity in some areas.
- a. Remove excessive accumulations of nest material (primarily for cliff-nesting raptors). Long-term buildup of nest material can bring a nest into reach of a cliff top, increasing accessibility by predators.
 - b. Remove rocks or other debris that has fallen into nests, rendering them unusable by raptors (primarily for cliff-nesting raptors).
 - c. Reinforce and stabilize trees, snags, and cliff ledges which contain existing nests to perpetuate continued use of these established sites.

II. REDUCING RAPTOR MORTALITY

1. Reduce maximum allowable speeds on roadways as much as practicable, taking into account the type and service area of the road.
2. Implement a removal program for wildlife carcasses along roadways to avoid further mortality of raptors that are attracted to carcasses. Distribution of carcasses to appropriate areas could be considered to supplement food sources for some raptor species, especially during winter periods.
3. Establish educational programs for project area employees to increase awareness of the potential for vehicular collisions and other encounters with raptor species within the project area.
4. Place road signs indicating raptor use areas at appropriate locations along existing and newly constructed roads. Some caution is warranted here. It may be undesirable to alert the public to the presence of raptors in some areas where the potential for illegal take may increase because of such actions.

5. Install and maintain power line facilities in a way that will reduce raptor collisions and electrocution, and encourage nesting/roosting use of properly constructed transmission towers and power poles where appropriate.
6. Limit the number and extent of access roads to minimize recreational use of previously isolated areas, thus reducing human-raptor interactions and probable conflicts.
7. Remove and reclaim roads as soon after requirements for their use have ended.
 - a. Remove excessive accumulations of nest material (primarily for cliff-nesting raptors). Long-term buildup of nest material can bring a nest into reach of a cliff top, increasing accessibility by predators.
 - b. Remove rocks or other debris that has fallen into nests, rendering them unusable by raptors (primarily for cliff-nesting raptors).
 - c. Reinforce and stabilize trees, snags, and cliff ledges which contain existing nests to perpetuate continued use of these established sites.

III. MITIGATING UNAVOIDABLE IMPACTS

Determine the extent and duration of unavoidable losses of raptor habitat. All opportunities to avoid or minimize impacts should already have been considered.

Determine impacts and mitigation for all phases of proposed land use activities, including construction, operation, and reclamation. Generally, mitigation should be determined by the degree of impact to raptors. The duration of an activity (short-term or long-term) would be part of this determination as follows:

For these guidelines, short-term is defined as an activity that would begin outside of a given breeding season and end prior to initiation of a given nesting season. Long-term is defined as an activity that would continue into or beyond a given nesting season.

1. If the proposed project activity is short-term, reclamation of disturbed areas can be accomplished during and following project completion. Habitat reclamation should involve seeding and/or vegetation plantings with native materials to approximate or improve pre-project conditions. Specification of seed mixes and plant types should be coordinated with local natural resource managers to ensure selection of appropriate species. Seedlings and plantings should be selected which provide diverse and native vegetation, encouraging habitat diversity, which supports abundant prey populations. Fertilization and/or watering programs may be necessary to successfully establish the vegetation.
2. If the proposed project is long-term or permanent, up-front habitat acquisition, development and/or improvement to mitigate for impacted areas should be considered prior to initiation of the proposed activity. The amount and type of mitigation should be based on losses in habitat value. On-site, in-kind mitigation is preferred, however, off-site and/or out-of-kind mitigation

may be considered if the resulting benefits to raptor populations offset the predetermined losses for the project area.

Post-project monitoring to determine the effectiveness of habitat mitigation measures on raptor populations should be an integral component of the mitigation plan. Publishing data and results should also be considered to develop information regarding raptor populations and responses to human activities and developments.

IV. NEST AND ROOST PROTECTION

Raptors typically demonstrate a high degree of fidelity to nesting locations. Successful habitat management should be complemented by efforts to attain natural or pre-development nesting success of local raptor populations and protection of winter roosting activities. Spatial and seasonal buffer zones have regularly been used to protect individual nest sites/territories to ensure successful breeding and to maintain high use areas by raptors.

Recommendations provided herein are in accordance with the Service's Utah Field Office policy that:

- No temporary or permanent surface occupancy occur within species-specific spatial and seasonal buffer zones.
- Coordination with appropriate Service, UDWR, and/or land management agency biologists should occur when implementing nest/roost site protective measures to ensure that the intent of these guidelines and associated state and federal regulations are realized.
- Buffer zones are defined as seasonal or spatial areas of inactivity in association with individual nests or nesting territories. Spatial buffers are defined as radii from known occupied and unoccupied nest sites. Seasonal buffers are restrictions on the times when human activities should be allowed to occur within the spatial buffers.
- Protection of both occupied and unoccupied nests is important since not all raptor pairs breed every year or utilize the same individual nest within a nesting territory. Individual raptor nests left unused for a number of years are frequently reoccupied. For instance, non-use may occur over one prey fluctuation period ($7 \pm$ years) for species such as golden eagles or ferruginous hawks. The importance of individual nest site(s) to overall population stability is unknown, but it is likely that individual sites are selected by breeding pairs for the preferred attributes provided at that location.
- Occupied Nests are defined as those nests that are repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or nest marking, freshly molted feathers or plucked down, or current years' mute remains (whitewash) suggest site occupancy. Additionally, all nest sites within a nesting territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site remains occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

- Unoccupied Nests are defined as those nests not selected by raptors for use in the current year. Nests would also be considered unoccupied for the non-breeding period of the year. A qualified wildlife biologist should determine the exact point in time when a nest becomes unoccupied, based on upon knowledge that the breeding season has advanced such that nesting is not expected.

V. GUIDELINES FOR AVOIDING AND MINIMIZING IMPACTS

Determine the appropriate species-specific spatial and seasonal buffer zones as presented in Table 2-7 for raptors that may be impacted by the proposed land-use activity.

A. NESTING

Seasonal buffers represent the outermost dates known in Utah for the arrival of adult birds at nesting territories through post-fledging dependency of the young. Actual dates for each stage of nesting can vary by region, elevation, and weather conditions; as well as individual pairs. For instance, sharp-shinned hawks in Washington County in southwestern Utah nest two to three weeks earlier than those in Cache County in northern Utah. Routine, annual surveys of nesting localities may provide more precise on-site information regarding individual nests. Survey results should be clearly documented to augment available information on raptors. Biologists from the Service, UDWR, and/or land management agency should be consulted for site-specific nesting chronology that would allow adjustment of these recommended seasonal buffers.

Typically, the recommended spatial buffers (see Table 2-7) for threatened and endangered species are 1.0 miles (except 0.5 miles for the Mexican spotted owl); recommended spatial buffers for other diurnal raptors are 0.5 miles except 0.25 miles for the prairie falcon; and no buffer is presently considered necessary for the American kestrel and common barn-owl. Exceptions are based in part on suspected tolerance levels within Utah and existing Recovery Plans.

B. WINTER ROOSTING

Spatial buffer zones recommended for raptor nesting protection are also encouraged for activities occurring proximal to raptor winter concentration areas from November through March. We recommend maintaining a spatial buffer equal to one-half of the recommended buffers for nests (Table 2-7) unless site-specific topography or vegetation allow for smaller buffers. Appropriate Service, UDWR, and/or land management agency biologists should be consulted prior to adjusting buffers for winter concentration areas.

Daily activities which must occur within recommended spatial buffers at winter night roost sites should be scheduled after 0900 hours, after which most raptors have vacated their roost. Likewise, daily activities should terminate at least one hour prior to official sunset to allow birds an opportunity to return to the roost site undisturbed.

Aircraft flight paths should also respect recommended spatial and seasonal buffer zones. Where intrusions within the recommended buffers must occur, flights should maintain a minimum 1000

feet elevation and minimum 30 mph speed during overflights to minimize disturbance to raptors and raptor nest sites.

Apply the information attained above to the following guidelines for occupied and unoccupied nest sites to avoid or minimize effects of proposed land use activities to nesting raptors:

- Occupied raptor nests: Activities should not occur within the spatial/seasonal buffer of any nest (occupied or unoccupied) when raptors are in the process of courtship and nest site selection. Egg laying, incubation, fledging, brooding, and post-fledging dependency periods are protected by varying seasonal and spatial buffers.
- Short term land use and human use activities should only proceed within the spatial buffer of an occupied nest outside the seasonal buffer, after coordination with appropriate Service, UDWR, and/or land management agency biologists. Mitigation for habitat loss or degradation should be planned. Long term land use activities and human use activities should not occur within the species-specific spatial buffer zone of occupied nests.
- Unoccupied raptor nests: If a nest site within a territory is deemed unoccupied after sufficient time has elapsed in a specified breeding season and prior to the beginning of the next year's breeding season, human activity could be allowed within the nesting area. This period varies dependent on raptor species. However, as a general rule, even renesting will usually not occur later than May 30.
- Short-term land use and human activities may progress near a nest or nest territory designated as unoccupied. For long term land use activities, unoccupied nests should be protected for 7 years, or the period a known preferred prey species fluctuates from population highs to lows. At the end of the 7-year period, a qualified wildlife biologist should evaluate each nest as to its potential future use. Criteria could include the raptor species current population trend in the local area, the corresponding prey species population levels and trends, as well as past, current, and future impacts of the proposed action. Nests could also be considered permanently abandoned if the nest has been physically damaged past the point of repair by raptors.
- Long-term land use activities and human use activities should not occur proximally to unoccupied nests unless it is determined that mitigation is appropriate and can be accomplished prior to initiation of the long-term disturbance. Coordination with Service, UDWR, and/or land management agency biology is recommended when completing this assessment.
- Establish and ensure implementation of post-project and post-mitigation monitoring plans to determine possible impacts to the local raptor population as well as success of mitigative measures. Monitoring should include documentation of raptor nesting success, use of historical roost concentration areas, as well as recovery of affected prey base and habitats.
- Situations may arise where human activity must occur within recommended spatial and seasonal buffers provided for raptors. For instance, a raptor may decide to construct a new nest in an area already threatened by mining subsidence or within an area previously unused by raptors and scheduled for development. When taking of nests is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. Coordination with appropriate Service, UDWR,

and/or land management agency biologists should occur to ensure compliance with State and Federal wildlife regulations.

- Examples of techniques to mitigate unavoidable impacts to raptors and their habitats follow. These recommendations are not all-inclusive of available strategies, but provide a framework for land use planners to follow. Project proponents should select management recommendations and/or develop other techniques based on the raptor species, the project and its potential impacts. Success of these techniques is generally varied and somewhat dependent on the species, individual raptors, individual breeding pairs, and type of disturbance.

C. RELOCATION OF YOUNG AND NESTS

Extensive coordination with Service, UDWR, and/or resource management wildlife biologists is highly encouraged when attempting relocation of young and nests of raptors. Techniques involving relocation of raptor young and nests have been successfully accomplished for some species and are intended to maintain a breeding pair's use of their home range despite disturbance or loss of the traditional nest site. Nonmigratory species such as golden eagles, which maintain an average of four to six nests per nesting territory in Utah, may be more accepting of this strategy than migratory raptors which may shift territories in response to prey availability. Case studies in Wyoming showed high success rates for relocation of golden eagle and ferruginous hawk nests and nestlings. Relocations of great horned owls, short-eared owls, prairie falcons, and red-tailed hawks also have met with success. The following recommendations have been provided to foster successful relocation efforts:

1. Determine a raptor pair's home range and movement patterns.
2. Select a relocation site as far from disturbance as possible, but within the home range and near preferred use areas such as roosts, perches, and foraging sites.
3. Line of sight visibility to original nest sight should be considered. If distant or not visible from original nest, the relocation may be made in stages with a mobile platform. Moves greater than 1/4 mile distant from the original nest are not recommended. Selection of previously used nest locations or natural substrates for relocation is preferred.
4. Establish new nest sites at least two years prior to planned relocation to allow acclimation by the adult birds.
5. Schedule nest relocations to occur outside the raptor's breeding season.
6. Nestlings should only be moved when they are one-half way through the nestling period since they no longer require continuous brooding by the adults.

D. DETERRING USE OF AN EXISTING NEST

Extensive coordination with Service, UDWR, and/or resource management wildlife biologists is highly encouraged when attempting to discourage use of an existing nest by raptors. Deterrence

measures are restricted to non-lethal methods intended to prevent nesting in areas under active development and at nests where destruction or high levels of disturbance are likely to occur. Nesting raptors would be afforded complete protection until fledging of young is completed. Deterrence is not always successful; consideration should be given to whether other potential nests or nests sites are available within the area. The following deterrence methods are recommended:

1. Blocking access to nests with welded wire to prevent egg laying.
2. Blocking access to nests has resulted in breeding pairs building new nest sites and accepting existing alternate nests. At a coalmine in southeastern Utah, a golden eagle pair succeeded at removing the nesting material from beneath the wire cage, to rebuild the nest at a nearby location.
3. Removing nest starts or rendering a nesting substrate unusable.
4. Repeated disturbance using loud noises.
5. Some wildlife may become habituated over time to loud noises or scare tactics, so this may provide only short-lived deterrence.

E. HABITUATING RAPTORS TO INCREASED DISTURBANCE OR NOISE LEVELS

Beginning land use, human activities, or construction prior to the breeding season will allow a pair of raptors to “choose” whether the nest site is still acceptable considering the disturbance. Warning sirens at regular intervals have also been used to alert raptor pairs to potentially startling noises such as blasting. This technique has generally been used where there is no acceptable alternative to the proposed action. While loss of the nest site may occur, the goal of this technique is to avoid the loss of eggs or young and allow the adults an opportunity to select an alternate nesting site.

Monitoring and documentation of results is recommended following any of the aforementioned techniques to maximize success of efforts. Publishing data and results should also be considered to widely circulate information regarding success of raptor mitigation techniques.

F. CONCLUSION

It has been the intent of these guidelines to provide land use planners with the tools to develop successful raptor management and mitigation strategies proximal to disturbances from land use activities. Raptor survey information attained through implementation of these guidelines will also provide a means to track raptor population trends and document population responses to human use of their environments.

The guidelines have presented recommendations for protection of raptor life stages (i.e., nesting and wintering) as well as raptor habitats. The recommendations are not exhaustive of available protective strategies, nor are all recommendations intended to be incorporated on every proposed

project. Coordination with appropriate Service, UDWR, and/or land management agency biologists is important during the analysis of project impacts and selection of protective measures.

Project proponents should seek first to avoid or minimize impacts. Where there are inevitable losses or degradations of habitat or disturbance to individual birds, mitigation can be incorporated to lessen the impact. Overall, these guidelines have been designed to maintain viable raptor populations amid continued human use of the environment.

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